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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/804,771	03/19/2004	Alfredo M. Morales	SD8287.1	7779
7590	12/08/2004			
Timothy Evans MS 9031 Sandia National Laboratories 7011 East Avenue Livermore, CA 94550			EXAMINER BARRECA, NICOLE M	
			ART UNIT 1756	PAPER NUMBER

DATE MAILED: 12/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	10/804,771	
Examiner	MORALES ET AL.	
Nicole M Barreca	Art Unit 1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 19 March 2004.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 12-23 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 12-23 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.

4) Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) Notice of Informal Patent Application (PTO-152)
6) Other: _____.

DETAILED ACTION

1. Claims 12-23 are pending in this application.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 12-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 12 as written only requires one cavity. It is therefore unclear how a plurality of embedded metal structures are formed.

It is unclear how trench-like and hole-like, as recited in claim 13, further define an open cavity.

It is unclear what is meant by some of the surfaces intersecting to form an edge or corner, as recited in claim 16, as all intersections by definition form an edge.

Claims 19 and 20 recite depositing a first metal layer. This is unclear since there are never any additional metal layers mentioned.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 12-17, 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Joshi (US 5,757,879).
6. Joshi teaches in the background, a prior art x-ray mask. The mask consists of patterned trenches formed in a Si substrate and filled with CVD tungsten (IUPAC Group 6). The trenches are cone shaped with a sloping sidewall and are therefore non-prismatic (curved and triangular). See col.1, line 38- col.2, line 8.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 12-14, 16, 17-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vlannes (US 5,004,673) in view of Brady (US 4,4,36,797).
9. Vlannes discloses a method for manufacturing surface relief patterns of variable depth. Substrate material 3 including one or more non-prismatic cavities (fig. 5b). The etched substrate is coated with a single or multiple layer material film 5 in order to obtain enhanced optical properties. Examples include Au, Ag, Al, Cu or W deposited in a vacuum chamber or by electrochemical means (fig.5c). A thin layer of chromium may be deposited first in order to improve adhesion. See col.5, 49-col.6, 65. Vlannes is silent on the specific substrate material and does not disclose a silicon substrate. The reference however does disclose that the resulting structure is for use as an optical element. Brady teaches that silicon is a known material used for a substrate in an x-ray

mask (col.1, 36-48). It would have been obvious to one of ordinary skill in the art to use a silicon substrate for the optical element in the method of Vlannes because Brady teaches that silicon is a known material for use as a substrate for an x-ray mask.

10. Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Joshi as applied to claim 19 above, and further in view of Shepela (US 6,060,387).

11. The reference discloses depositing tungsten using CVD and does not disclose using electroplating, electroless deposition, thermal or particle vapor deposition or sputtering. Shepela teaches that tungsten is also known to be deposited using sputtering, electroplating or electroless deposition (col.3, 55-59). It would have been obvious to one of ordinary skill in the art to deposit the tungsten layer in the method disclosed by Joshi using sputtering, electroplating or electroless deposition instead of CVD because Shepela teaches that these are all known deposition methods for tungsten.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nicole M Barreca whose telephone number is 571-272-1379. The examiner can normally be reached on Monday-Thursday (9AM-7PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nicole M Barreca
Examiner
Art Unit 1756

12/3/04

